

KSTC

KENTUCKY SCIENCE & TECHNOLOGY
C O R P O R A T I O N

2003 Annual Report
to Council on Postsecondary Education
September 15, 2003



Commercialization Investment Fund
(CIF):

R&D Voucher Fund
Rural Innovation Fund
Commercialization Fund
ICC Concept Pool

Kentucky Science and Engineering Foundation
(KSEF)

Kentucky Experimental Program to Stimulate Competitive Research
(KY EPSCoR)



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(The contents for the following chapters are contained in those chapters)

II	Commercialization Investment Funds (CIF)
III	Kentucky Science and Engineering Foundation (KSEF)
IV	Kentucky Experimental Program to Stimulate Competitive Research (KY EPSCoR)

List of Attachments:

1. Investment Portfolio by Fund
2. Investment Portfolio by Priority Focus Area
3. Investment Portfolio by University
4. Sample CIF Tear Sheet
5. Sample KSEF Request for Proposals
6. KSEF Feedback Survey Narrative Responses
7. KSTC Board of Directors
8. Bios of KSTC Staff Involved in KIA Funds
9. Summary of KSTC Board Meeting Minutes
10. CIF Commercialization Review Panel Meeting Notes
11. KSEF Advisory Board Meeting Notes
12. Statewide EPSCoR Committee Meeting Minutes
13. Press Releases and News Clips
14. KIA Program Brochures

I. EXECUTIVE SUMMARY

Highlights

July 1, 2000 - June 30, 2003

336 Investments
in 9 Universities, 67 Companies, and 32 Counties
\$13.9M State Funds Invested
\$32M Non-State Matching
\$8.9M Follow-on Leveraging
13 Contracts with Negotiated Payback
17 New Companies Formed
Over 300 Students Working on Research

These awards were selected under nationally competitive due diligence and professional reviews of 627 applications, which requested more than \$28M

A. BACKGROUND

Kentucky Science and Technology Corporation (KSTC) is an independent nonprofit and was incorporated in 1987. Its longstanding mission is "to enhance the capacity of people companies and organizations to develop and apply science and technology and compete responsibly in the global marketplace." The Board of Directors is self-appointing with representatives from the private sector, education including the public and private universities, and other organizations relevant to the KSTC mission (see attached list).

Kentucky's Science and Technology Strategy (1999) was produced by KSTC in coordination with public and private sectors partners and remains a testament to our commitment to advancing innovation in general and the resultant Kentucky Innovation Act (KIA) specifically. As such, in 2001, 2002, and 2003 KSTC entered into contracts with the Commonwealth of Kentucky through the Council on Postsecondary Education (CPE) to create and manage various KIA programs. Currently these include:

- Commercialization Investment Funds (CIF):
 - R&D Voucher Fund
 - ICC Concept Pool
 - Rural Innovation Fund
 - Kentucky Commercialization Fund
- Kentucky Science and Engineering Foundation (KSEF)
- Kentucky Experimental Program to Stimulate Competitive Research (EPSCoR)

NEW APPROACH

The implementation of these KIA programs represents a new approach to investing Kentucky funds in Kentucky's future. The new programs (CIF and KSEF) have been designed by KSTC as investments with contractual expectations for returns on investment (ROI) upon financial triggers when a new technology begins to generate substantial revenues. The ROI payback arrangements, primarily CIF for investments, are the first of their kind in Kentucky, whereby any negotiated financial returns are to be reinvested in KIA programs.

PROGRAM ANALYSES

The data analyses of CIF and KSEF programmatic activities include all investments dating back to the first year such awards were made by KSTC, and include investments committed during the State FY02 and FY03. FY01 was dedicated to creating the programs. This report brings up to date the information on these programs into one document as a reference baseline report.

Please be advised that due to the dynamic nature of these programs, there are three projects that were approved but either contract negotiation ended without a contract or a signed agreement was canceled after a faculty left the state. These approved but later cancelled projects are not included in the comprehensive analyses.

Also note that a transition is underway in data reporting by the EPSCoR program, which also contributes to the New Economy mission of making investments in university research. With FY03 data, EPSCoR has begun the transition to reporting formats that are conducive to analysis by KIA research focus area. Only FY03 EPSCoR information is presented in the comprehensive analysis across the five priority focus areas, etc.; however, the total lump sum program investments from the FY01 and FY02 are listed to provide a comprehensive picture of all EPSCoR program activities since the passage of the Kentucky Innovation Act.

The EPSCoR is funded by six different federal agencies, which operate on fiscal years different from the State and, in many cases, each other. Reasonable caution is advised in making direct comparisons of federal funds with State funds that operate exclusively on the State fiscal year.

FINANCIAL REPORTING

Fund balances and related financial information contained in this summary also are presented for both program and administrative activities. This covers all relevant years to date for which KSTC has entered into contracts with CPE for creating and administering these programs, i.e., FY01, FY02 and FY03.

The financial data address: State appropriations and disbursements; KSTC receipts, expenditures and fund balances; and FY03 actual distribution of staff salaries across these KIA funds, which is based on monthly allocations of time.

B. PRIORITY FOCUS AREAS

Consistent with the priority focus areas established by the New Economy Strategic Plan, KSTC has implemented the new programs under the Commercialization Investment Funds (CIF) and the Kentucky Science and Engineering Foundation (KSEF) exclusively in the areas of Biosciences, Environmental and Energy Technologies, Human Health and Development, Information Technologies and Communications, and Materials Science and Advanced Manufacturing. The Kentucky Experimental Program to Stimulate Competitive Research (EPSCoR) has made these a priority where feasible in complying with guidelines with the federal agencies that sponsor EPSCoR funding and with other priorities set by the Statewide EPSCoR Committee.

C. THE FUNDS

COMMERCIALIZATION INVESTMENT FUNDS (CIF)

The Commercialization Investment Funds (CIF) are a series of pre-seed and seed stage capital funds aimed at promoting and developing early stage technology companies in the Commonwealth of Kentucky. There are four funds within CIF: Kentucky Commercialization Fund, Rural Innovation Fund, R&D Voucher Fund, ICC Concept Pool Fund.

The basic eligibility requirements, available funds for each, investment amounts, application frequency and whether or not the investment is subject to payback are provided in Table 1.1.

TABLE 1.1 CIF Program Descriptions

CIF Fund:	Kentucky Commercialization	Rural Innovation	R&D Voucher	ICC Concept Pool
Eligibility:	Proposal must come from university faculty (pre-company) to commercialize a technology/product/process. Work must be done at faculty member's organization.	Rural Kentucky based companies with less than 150 employees. Must use funds to contract with a third party consultant.	Kentucky-based companies with less than 150 employees Must contract with an accredited postsecondary institution.	These funds are a carve-out of the R&D Voucher Fund. ICC companies in good standing, working the ICC Process.
Target:	Faculty members	Inventors or entrepreneurs	Existing Companies or Entrepreneurs	Existing Companies or Entrepreneurs
Annual State Funding	\$750,000	\$1,000,000	\$2,800,000	\$200,000
Investment Amount(s)	\$75,000/year for up to 3 years	\$50,000/year for up to 2 years	\$100,000/year for up to 2 years	\$25,000 1x award
Matching Requirement	None	None	1:1	1:1
Application Frequency	1x/year	3x/year	3x/year	open
Payback Required?	yes	For any cumulative award amount > \$25,000	yes	no

KENTUCKY SCIENCE AND ENGINEERING FOUNDATION (KSEF)

Under the Kentucky Innovation Act, the General Assembly directed the Kentucky Science and Technology Corporation (KSTC) to create and manage the Kentucky Science and Engineering Foundation as a means to increase Kentucky's capacity to become a leader state in competitive research by making its own investments in peer-reviewed science and engineering research and by attracting more research funding from all sources to the Commonwealth. This mission is carried out under four programs as follows.

R&D Excellence - purpose is to achieve excellence in science and engineering and allow innovation and technology development in existing and emerging areas of research by making proactive investments through an annual peer-reviewed competitive selection process.

TABLE 1.2 KSEF: R&D Excellence Grant Categories

R&D Excellence Grant category	Average Grant Size and Length	Eligibility	Approximate Annual Budget for State Funding	Matching Requirement (cash/in-kind)
Exploratory Adv. Research	\$50,000/Year for up to 2 Years	University Faculty	\$800,000	1 to 1
Purpose-Driven Research	\$30,000/Year for up to 2 Years	University Faculty	\$600,000	1 to 1
Emerging Technologies	\$40,000/Year for up to 2 Years	University Faculty & Sm. Businesses	\$400,000	1 to 1
Emerging Ideas	\$15,000 for up to 1 Year	University Faculty	\$200,000	None

Technology Capacity Building – purpose is to build and enhance capacity in developing intellectual property and technology portfolio and understanding of the technology transfer process and federal programs for small businesses.

Human Resource Development – purpose is to build and retain excellent human capital by providing appropriate science and engineering training to students through creative programs and by enhancing the knowledge and skill set of the providers through on-site short courses.

Information Resources Center – purpose is to become a one-step information resource center by gathering and disseminating the information on science and engineering in Kentucky.

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH (KY EPSCOR)

The Kentucky Statewide EPSCoR (KY EPSCoR) Program's mission is to enhance the research and intellectual capacity of universities and colleges by building and coordinating strategic investments in human capital and physical infrastructures necessary for Kentucky to excel in federal R&D funding competitiveness. The Statewide Program is divided into two programmatic areas: the *Federal Agency EPSCoR Program* which requires state matching funds, and the *KY EPSCoR Infrastructure Seeding Program* which requires institutional matching funds and a commitment to submit a proposal for federal R&D funding. Federal agencies operating EPSCoR programs include: National Science Foundation (NSF), NASA, Department of Energy (DOE), Department of Defense (DOD), Environmental Protection Agency (EPA), National Institutes of Health (NIH).

TABLE 1.3 EPSCoR Program

Federal Agency Program	Federal Grant Fiscal Year	Period of Performance	Federal Requirement for Matching Funds	Sample Annual Budget for State Funds
NSF	3/1-2/28	3/01-2/04*	2 to 1	\$1,523,671
NASA	8/1-7/31	8/01-7/04**	1 to 1	\$200,000
DOE	7/1-6/30	7/00-6/03***	1 to 1	\$400,000
EPA	10/1-9/30	10/01-9/04	1 to 1	\$130,000
NIH	varies	varies	none	
DOD	varies	varies	2 to 1	
Infrastructure Support (State)	7/1-6/30	varies	varies	

* NSF - amendable through 2/05

** NASA - extendable through 7/06

***DOE - Continuation funding was awarded 7/03 for period 7/03-6/06

D. THE INVESTMENTS

The following series of tables presents an overview of KSTC's KIA investments for the period of FY01-FY03. Included are analyses of numbers of awards and State and Non-State matching funds by:

--KIA fund (Table 1.4),

--priority focus area (Table 1.5), and

--university (and company) awards (Tables 1.6 and 1.7).

TABLE 1.4 KSTC OVERVIEW OF INVESTMENTS BY KIA FUND

TABLE 1.5 KIA Investments by Priority Focus Areas

TABLE 1.6 State Funding of KIA Investments by University and Focus Area

TABLE 1.7 KIA Investments by University and Fund

E. INVESTMENT IMPACT

PAYBACK PROVISIONS

Twelve (12) CIF contracts contain negotiated repayment stipulations and will be monitored until contractual milestones are achieved, thereby triggering the payback of the investment. Many current monitoring commitments extend to 2009 and as far as 2016, requiring ongoing contract support well beyond the term of the financial award.

One (1) KSEF agreement with a small company negotiated equity position in the company for the return on investment.

FOLLOW-ON LEVERAGING

KSEF awardees received follow-on grants totaling \$4,302,383 from six (6) federal agencies. Follow-on investments of \$4,610,000 have been made in eight (8) CIF companies from primarily private sources

WOMAN AND MINORITY-OWNED BUSINESSES

Minorities companies (including women and economically disadvantaged) received \$222,200 in CIF awards, comprising less than 10% of the total amount of CIF funds committed.

INNOVATION PIPELINE

Five (5) CIF companies have received funding under KSEF (R&D Excellence and Phase 0). At least two KSEF awardees also have been EPSCoR recipients.

INTELLECTUAL PROPERTY

KSEF awardees have submitted two (2) invention disclosures and (3) three provisional patent applications based on the results obtained in the KSEF-funded research.

Beginning nine (9) months after receiving the KSEF awards, the awardees have submitted and published nearly 40 research manuscripts in various refereed journals. These manuscripts are at different stages of publication.

Beginning six (6) months after receiving the KSEF awards, the awardees have made more than 100 presentations at scientific meetings at the local, national and international meetings in 20 states, Washington D.C., and five (5) countries that included China, Mexico, France, Brazil and England.

STUDENTS IN RESEARCH

One hundred and ten (110) graduate students, undergraduates and post-doctoral scientists are working on KSEF research grants.

One hundred and eighty (180) students were involved in EPSCoR projects.

OTHER WORTHY KSEF PROPOSALS

If additional KSEF funds were available and it was possible to fund all proposals with ratings of excellent and very good, 63 other proposals potentially would have received consideration for KSEF funding of \$ 4,181,491 and brought additional total matching of \$4,866,450.

PUBLIC AWARENESS

Announcements were released to the media after each major funding approval. The series of press releases are included in the appendices. Related news clips are also attached.

The first annual Innovation and Enterprise Conference was held in March 2003 to feature the researchers and entrepreneurs in which KIA funds have been invested. Posters and table top demonstrations were available for awardees from CIF, KSEF and EPSCoR. In addition, a series of sessions were arranged for a limited number of companies to pitch their technologies to venture capitalists from around the region. Approximately 300 people attended this first-ever conference. The second conference date has been scheduled for March 3, 2004.

A "Portfolio of KIA Investments" has been prepared and routinely updated as new investments have been approved by the KSTC Board of Directors. Attached is the portfolio of projects approved through June 30, 2003. One version is presented by KIA Fund and another version presents the same information by focus area.

Brochures on various funds have been prepared and are disseminated at every opportunity. Websites for each program are a main source of up to date information on request for proposals, funding guidelines and award announcements. CIF is www.startupkentucky.com; KSEF is <http://ksef.kstc.com>; EPSCoR is www.kyepscor.org. In addition, the KSTC website links all these sites in one address at www.kstc.com.

Also in development is a web-based word search function of KSTC's KIA databases to help further analyze the abstracts of each investment for trends in subject matter relevant to a given audience. It will be user driven and available to search for all investments by any word of interest -- such as terms of particular interest to Kentucky (i.e., coal, cancer, diabetes, tobacco, nano-scale projects, etc.) This is in addition to the focus area listings of all KIA investments, which are found in the Attachments.

F. FINANCIAL HIGHLIGHTS

The following tables include financial highlights for the period FY01-FY03, except as noted:

- Summary of State appropriations and disbursements (Table 1.8),
- Summary of KSTC receipts, expenditures and fund balances (Table 1.9), and
- Actual FY03 distribution of staff salaries to these KIA programs (Table 1.10).

As always, other backup details for these financial figures are available on request.

TABLE 1.8 Appropriations and Disbursements

TABLE 1.9 Receipts and Fund Balances

TABLE 1.9 (continued)

Table 1.10 Staff Allocations

EPSCoR PROGRAM FUNDS FROM CPE TO UNIVERSITIES

The preceding Summary of Receipts, Expenditures and Fund Balances does not reflect matching funds transferred directly from CPE to various Kentucky postsecondary institutions to leverage federal EPSCoR and EPSCoR-type grants. These transfers are coordinated by KSTC pursuant to a Personal Service Contract with CPE and corresponding Memoranda of Understanding with KSTC.

KSTC, in conjunction with the EPSCoR staff and institutions, has initiated an EPSCoR fiscal reporting structure to analyze budgeted versus actual federal and state matching receipts, expenditures, and fund balances for each fiscal year by funding source, institution, and project.

G. TECHNICAL NOTE

This Executive Summary analyzes all active investments, while the subsequent chapters on each fund focus on approved projects. Very minor discrepancies exist between the overall data analyses in this Summary and subsequent chapters (i.e., CIF and KSEF). This is a function of the dynamic nature of these programs. A few projects that were formally “approved” by KSTC either were not able to lead to a contract or the awardee left the state before completing the project.

H. ATTACHMENTS

Various attachments provide other information related to KSTC’s involvement in implementing KIA programs. Among others, these include:

- The portfolio of KIA investments,
- Sample documents from selected programs,
- Feedback survey narrative responses,
- List of KSTC Board of Directors,
- KSTC Staff involved in KIA activities,
- Relevant meeting minutes of policy actions,
- Relevant meeting notes of advisory panels, and
- News Releases, press clips and brochures.